AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1.   (Currently Amended) A computerized method for authenticating an electronic file, the method comprising the steps of:

receiving an electronic file having a graphical content <u>including, at least one graph comprised of one bit per pixel values</u>;

generating an object level representation of the ~~graphical content~~ <u>graph</u>; and

adding authentication information to the electronic file based on the object level representation of the ~~graphical content~~ <u>graph</u>, ~~wherein the graphical content contains binary pixel bit one bit per pixel values~~.

2.   (Cancelled)

3.   (Currently Amended) The method of claim 1 further comprising the step of converting the ~~graphical content~~ <u>graph</u> into a symbolic representation of the ~~graphical content~~ <u>graph</u>.

4.   (Currently Amended) The method of claim 3 further comprising the steps of:

defining nodes of the ~~graphical content~~ <u>graph</u> with specification symbols; and

defining relationships between the nodes of the ~~graphical content~~ graph with relationship symbols.

5.   (Original) The method of claim 4 further comprising the step of defining the shape, size, color, and position of the nodes.

6.   (Original) The method of claim 4 further comprising the step of defining conditions and familial relationships between the nodes.

7.   (Previously Presented) A computerized method for authenticating an electronic file, the method comprising the steps of:

receiving an electronic file having a graphical content;

generating an object level representation of the graphical content;

adding authentication information to the electronic file based on the object level representation of the graphical content, wherein the graphical content contains one bit per pixel values; and

authenticating the object level representation with a text authentication algorithm.

8.   (Previously Presented) A computerized method for authenticating an electronic file, the method comprising the steps of:

receiving an electronic file having a graphical content;

generating an object level representation of the graphical content;

adding authentication information to the electronic file based on the object level representation of the graphical content, wherein the graphical content contains one bit per pixel values;

authenticating the object level representation with a text authentication algorithm; and

authenticating the object level representation with a checksum.

9.   (Previously Presented) A computerized method for authenticating an electronic file, the method comprising the steps of:

receiving an electronic file having a graphical content;

generating an object level representation of the graphical content;

adding authentication information to the electronic file based on the object level representation of the graphical content, wherein the graphical content contains one bit per pixel values;

authenticating the object level representation with a text authentication algorithm; and

authenticating the object level representation with a checksum, wherein the checksum is a two-dimensional checksum.

10.   (Previously Presented) A computerized method for authenticating an electronic file, the method comprising the steps of:

receiving an electronic file having a graphical content;

generating an object level representation of the graphical content;

adding authentication information to the electronic file based on the object level representation of the graphical content, wherein the graphical content contains one bit per pixel values;

authenticating the object level representation with a text authentication algorithm; and

authenticating the object level representation with a checksum, wherein the checksum is a multi-dimensional checksum.

11.   (Previously Presented)   A computerized method for authenticating an electronic file, the method comprising the steps of:

receiving an electronic file having a graphical content;

generating an object level representation of the graphical content;

adding authentication information to the electronic file based on the object level representation of the graphical content, wherein the graphical content contains one bit per pixel values;

authenticating the object level representation with a text authentication algorithm; and

authenticating the object level representation with a cryptographic hash function.

12.   (Currently Amended) The method of claim 1 further comprising the step of authenticating the ~~graphical content~~ graph at a pixel level.

13. (Currently Amended) The method of claim 12 further comprising the step of adding visible authentication information to the ~~graphical content~~ graph.

14. (Previously Presented) A computerized method for authenticating an electronic file, the method comprising the steps of:

receiving an electronic file having a graphical content;

generating an object level representation of the graphical content;

adding authentication information to the electronic file based on the object level representation of the graphical content, wherein the graphical content contains one bit per pixel values;

authenticating the graphical content at a pixel level; and

adding visible authentication information to the graphical content, wherein the visible authentication information includes a bounding box.

15. (Previously Presented) A computerized method for authenticating an electronic file, the method comprising the steps of:

receiving an electronic file having a graphical content;

generating an object level representation of the graphical content;

adding authentication information to the electronic file based on the object level representation of the graphical content, wherein the graphical content contains one bit per pixel values;

authenticating the graphical content at a pixel level; and

adding visible authentication information to the graphical content, wherein the visible authentication information includes a bar code.

16.   (Currently Amended) The method of claim 12 further comprising the step of adding invisible authentication information to the ~~graphical content~~ graph.

17.   (Currently Amended) The method of claim 1 further comprising the step of partitioning the electronic file into the ~~graphical content~~ graph and textural content.

18.   (Previously Presented)) A computerized method for authenticating a binary graph, the method comprising the steps of:

authenticating the graph at a pixel level;

authenticating the graph at an object level;

encrypting the authenticated graph; and

transmitting the authenticated graph to a recipient.

19.   (Original) The method of claim 18 further comprising the step of adding visible authentication information to the graph.

20.   (Previously Presented) A computerized method for authenticating a binary graph, the method comprising the steps of:

authenticating the graph at a pixel level;

authenticating the graph at an object level;

encrypting the authenticated graph;

transmitting the authenticated graph to a recipient;

adding visible authentication information to the graph; and

forming a truncated image from the graph;

generating an initial message from the truncated image, the initial message defined by all bits of the truncated image;

converting the initial message into a padded message, the padded message having a size defined by a multiple of a predetermined length;

computing a hash value for the padded message;

converting the hash value into a public key encrypted message; and

converting the public key encrypted message into the visible authentication information.

21.   (Previously Presented)   A computerized method for authenticating a binary graph, the method comprising the steps of:

authenticating the graph at a pixel level;

authenticating the graph at an object level;

encrypting the authenticated graph;

transmitting the authenticated graph to a recipient;

adding visible authentication information to the graph; and

forming a truncated image from the graph;

generating an initial message from the truncated image, the initial message defined by all bits of the truncated image;

converting the initial message into a padded message, the padded message having a size defined by a multiple of a predetermined length;

computing a hash value for the padded message;

converting the hash value into a public key encrypted message; and

converting the public key encrypted message into the visible authentication information, wherein the visible authentication information includes a bounding box.

22.   (Previously Presented)   A computerized method for authenticating a binary graph, the method comprising the steps of:

authenticating the graph at a pixel level;

authenticating the graph at an object level;

encrypting the authenticated graph;

transmitting the authenticated graph to a recipient;

adding visible authentication information to the graph; and

forming a truncated image from the graph;

generating an initial message from the truncated image, the initial message defined by all bits of the truncated image;

converting the initial message into a padded message, the padded message having a size defined by a multiple of a predetermined length;

computing a hash value for the padded message;

converting the hash value into a public key encrypted message; and

converting the public key encrypted message into the visible authentication information, wherein the visible authentication information includes a bar code.

23.   (Original) The method of claim 18 further comprising the step of adding invisible authentication information to the graph.

24.   (Previously Presented)   A computerized method for authenticating a binary graph, the method comprising the steps of:

authenticating the graph at a pixel level;

authenticating the graph at an object level;

encrypting the authenticated graph;

transmitting the authenticated graph to a recipient;

adding invisible authentication information to the graph;

forming a truncated image from the graph;

selecting a verification bit from each pixel of the truncated image;

generating an initial message from the truncated image, the initial message defined by all non-verification bits of the truncated image;

converting the initial message into a padded message, the padded message having a size defined by a multiple of a predetermined length;

computing a hash value for the padded message;

converting the hash value into a public key encrypted message; and

embedding the public key encrypted message into the truncated image.

25. (Previously Presented) A computerized method for authenticating a binary graph, the method comprising the steps of:

authenticating the graph at a pixel level;

authenticating the graph at an object level;

encrypting the authenticated graph;

transmitting the authenticated graph to a recipient;

adding invisible authentication information to the graph;

forming a truncated image from the graph;

selecting a verification bit from each pixel of the truncated image;

generating an initial message from the truncated image, the initial message defined by all non-verification bits of the truncated image;

converting the initial message into a padded message, the padded message having a size defined by a multiple of a predetermined length;

computing a hash value for the padded message;

converting the hash value into a public key encrypted message;

embedding the public key encrypted message into the truncated image; and

maximizing spread between the verification bits.

26. (Previously Presented) A computerized method for authenticating a binary graph, the method comprising the steps of:

authenticating the graph at a pixel level;

authenticating the graph at an object level;

encrypting the authenticated graph;

transmitting the authenticated graph to a recipient; and

authenticating a symbolic representation of the graph with a text authentication algorithm.

27.　(Previously Presented)　A computerized method for authenticating a binary graph, the method comprising the steps of:

authenticating the graph at a pixel level;

authenticating the graph at an object level;

encrypting the authenticated graph;

transmitting the authenticated graph to a recipient;

authenticating a symbolic representation of the graph with a text authentication algorithm;

defining nodes of the graph with specification symbols; and

defining relationships between the nodes of the graph with relationship symbols.

28.　(Previously Presented)　A computerized method for authenticating a binary graph, the method comprising the steps of:

authenticating the graph at a pixel level;

authenticating the graph at an object level;

encrypting the authenticated graph;

transmitting the authenticated graph to a recipient;

authenticating a symbolic representation of the graph with a text authentication algorithm; and

coalescing the object level of the graph with the pixel level of the graph.

29.   (Currently Amended) A graph authentication system comprising:

an electronic file for receiving a graphical content <u>including, at least one graph</u>

<u>comprised of one bit per pixel values</u>;

    an object level authenticator for authenticating a <u>said</u> graph at an object level;

    a pixel level authenticator for authenticating the <u>said</u> graph at a pixel level;

    an encryption system for encrypting the authenticated; and

    a recipient for receiving the authenticated graph.

30.   (Original) The authentication system of claim 29 wherein the object level

authenticator converts the graph into a symbolic representation of the graph.

31.   (Original) The authentication system of claim 30 wherein the object level

authenticator includes:

    a specification module for defining nodes of the graph with specification symbols;

    a relationship module for defining relationships between the nodes of the graph

with relationship symbols; and

    a text authentication module for authenticating the symbolic representation with a

text authentication algorithm.

32.   (Original) The authentication system of claim 29 wherein the pixel level

authenticator includes:

a visible watermarking module for adding visible authentication information to the graph; and

an invisible watermarking module for adding invisible authentication information to the graph.

33.   (Original)   The authentication system of claim 32 wherein the pixel level authenticator further includes a coalescing module for embedding a hash value from the object level of the graph in the pixel level of the graph.